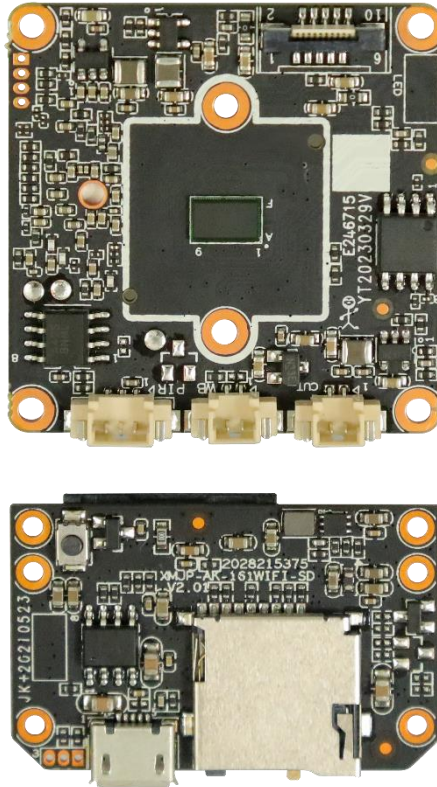


LPG-X4-WQ Module Specification

Document Version : 20231122



Introduction

LPG-X4-WQ is a 4MP battery camera module developed by our company, which is mainly used in high-definition video surveillance cameras.

Main Features



Wi-Fi Connection



HD Picture Quality



PIR Detection



Remote Wakeup



Battery Powered



Super Night Vision



Two-way Audio



TF Card Storage



H.265AI



Cloud Storage



PT Control

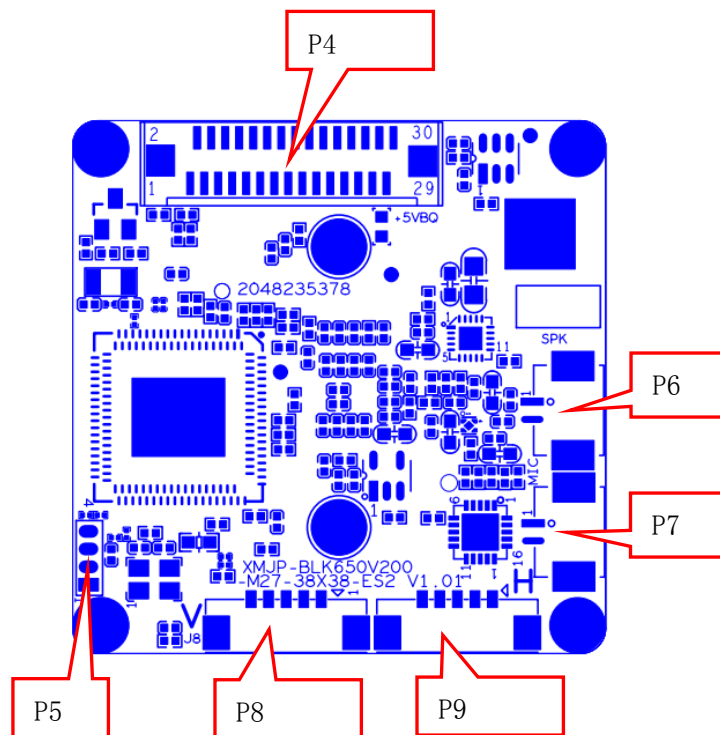
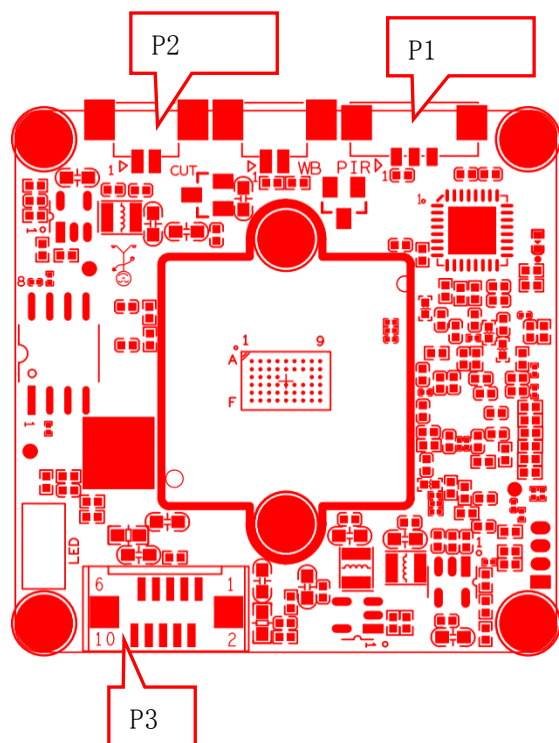
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1. Product Parameters

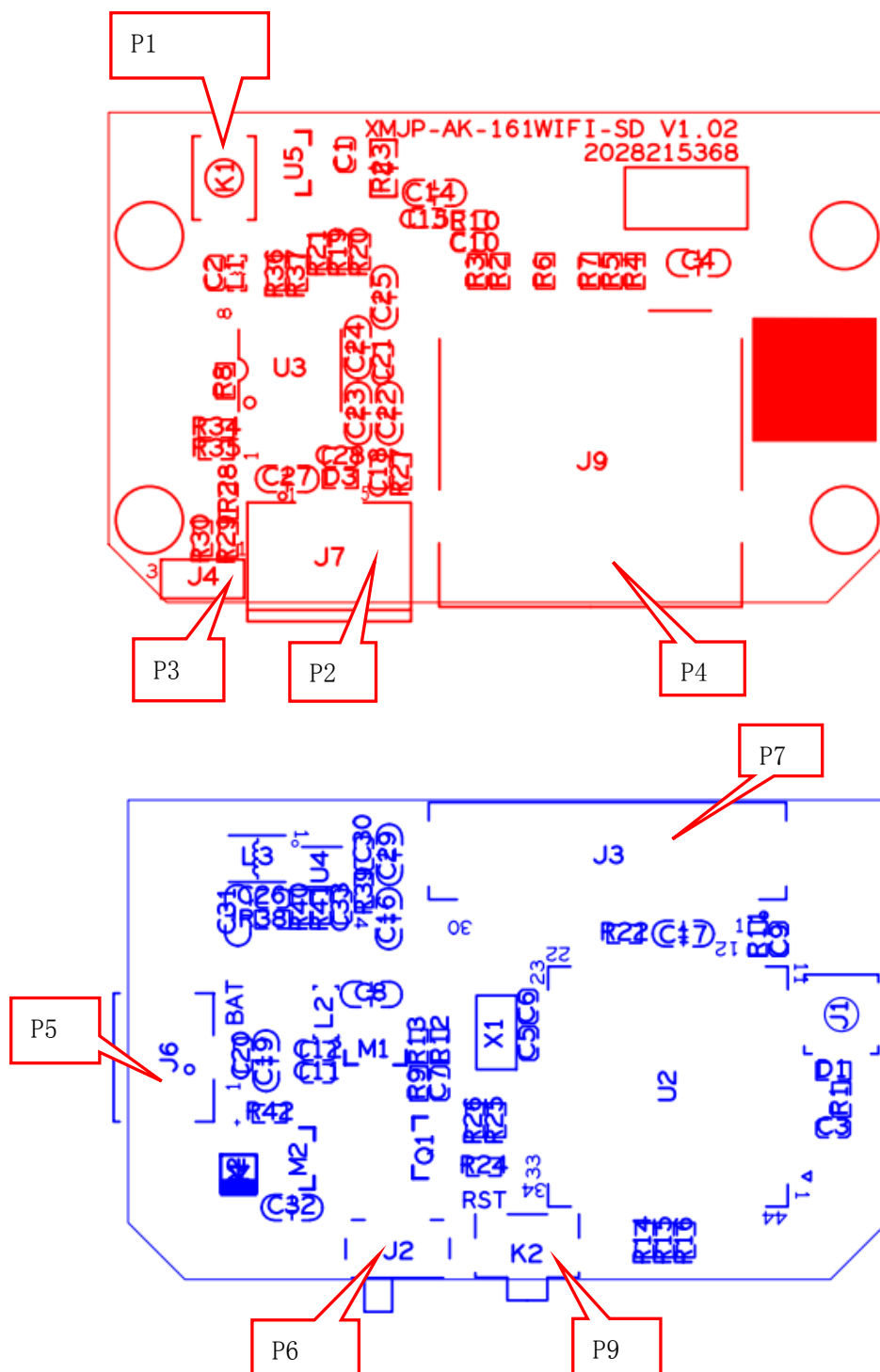
Model	LPG-X4-WQ
System Structure	dual-core 32-bit DSP (XM650V200) ,pure hard compression ,watch dog
Sensor	1/3" high performance CMOS Sensor
Min. Illumination	Color : 0.01Lux @(F1.2,AGC ON); 0 Lux with IR Black/White: 0.001 Lux @ (F1.2,AGC ON),0 Lux with IR
Video Compression	H.265AI
Image Output	Main stream: 2560*1440@12fps; Sub-code stream:800*448@12fps
Shutter	1/50(1/60)s to 1/10,000s
Day&Night	Support IR-CUT
DNR	Support 2D/3D noise reduction
WDR	Support
Audio Compression	G.711A codec standard, support dual voice talkback, audio and video synchronization
Audio Interface	1 channel input, support microphone input; 1 channel output, support speaker output playback
Network Interface	1*WIFI antenna interface to support wireless network connection
Signal Interface	1*photoresistor interface, 1*IR-CUT driver interface, support photoresistor input signal and IR-CUT, IR lamp linkage
Reset Interface	1*reset interface
Storage Mode	Local TF card, up to 128G; cloud storage
Reliability	Comprehensive lightning protection, in line with national and international standards; 3*24 hours high-temperature test stability and reliability
Smart Alarm	Supporting PIR detection support to customizing other intelligent functions
Functions	It supports remote monitoring of mobile client, push message after alarm of human detection, and supports MJPEG capture;
Mobile Monitoring	Support (iOS, Android)
Power Supply	4.2V lithium battery power supply
Dimension	38mm*38mm+38mm*24mm

2. Interface Description



Marking	Silk Screen Number	Pin Number	Pin Definition	Function
P1	J1	1	+3.3V_PIR	3.3V PIR power supply
		2	GND	GND
		3	PIR_IN	PIR signal
P2	J9	1	OUT1	ICR signal
		2	OUT2	ICR signal
P3	J3	1	GND	GND
		2	+5V_BQ	4.2V power supply
		3	3V3	3.3V power supply
		4	3V3	3.3V power supply
		5	GND	GND
		6	WLED_EN	White light signal _NC
		7	LED_EN	The infrared light switch signal is highly effective
		8	ADC_IN	Photosensitive signals
P4	J4	9	MCU_LED1	Blue LED indicator
		10	MCU_LED2	Red LED indicator
		1	WIFI_CLK	WiFi clock
		2	GND	GND
		3	WIFI_CMD	wifi command
		4	WIFI_DATA0	Wifi signal
		5	GND	GND
		6	PWR_HOLD	Power supply enabled

		7	PIR_IN	PIR signal
		8	GND	GND
		9	CARD_DETECT	SD card detection
		10	/	/
		11	SD0_DATA3	SD card data
		12	SD0_DATA0	SD card data
		13	SD0_DATA1	SD card data
		14	SD0_DATA2	SD card data
		15	SD0_CMD	SD card commands
		16	SD0_CLK	SD card clock output signal
		17	GND	GND
		18	SD1_HOST_INT0	Wifi interrupts the signal
		19	MCU_LED1	Blue LED light
		20	MCU_LED2	Red LED light
		21	SW_ON/OFF	Master reset signal
		22	GND	GND
		23	WB_IN	Microwave signal
		24	GND	GND
		25	3V3	3.3V power supply
		26	+5V_LI	Battery power 3.3V-4.2V
		27	GND	GND
		28	GND	GND
		29	+5V_BQ	4.2V power supply
		30	+5V_BQ	4.2V power supply
P5	J5	1	GND	GND
		2	UART0_TXD	Serial
		3	UART0_RXD	Serial
		4	BOOTSEL0	Configure the signal
P6	J6	1	VOP	The horn signal is positive
		2	VON	The horn signal is negative
P7	J7	1	MICN	Microphone Negative
		2	MICP	Microphone Positive
P8	J8	1	+5V_M2	4.2V power supply
		2	V_MOTO8	Vertical motor signal
		3	V_MOTO7	Vertical motor signal
		4	V_MOTO6	Vertical motor signal
		5	V_MOTO5	Vertical motor signal
P9	J2	1	+5V_M1	4.2V power supply
		2	H_MOTO4	Horizontal motor signal
		3	H_MOTO3	Horizontal motor signal
		4	H_MOTO2	Horizontal motor signal
		5	H_MOTO1	Horizontal motor signal



Marking	Silk Screen Number	Pin Number	Pin Definition	Function
P1	K1	1		Microcontroller reset button
P2	J7	1		Micro USB interface
P3	J4	1	UART0_RXD	Serial
		2	UART0_TXD	Serial
		3	GND	GND
P4	J9	1	SDIO1_CDATA2	SD card data

		2	SDIO1_CDATA3	SD card data
		3	SDIO1_CCMD	Control commands
		4	3.3VSD	3.3V power supply
		5	SDIO1_CCLK_OUT	Clock signal output
		6	GND	GND
		7	SDIO1_CDATA0	SD card data
		8	SDIO1_CDATA1	SD card data
		9	CARD_DECT	SD card detection
P5	J6	1	GND	GND
		2	+5V_LI	Battery positive stand
P6	J2	1	toggle switch	Battery switch function
P7	J3	30	SD1_CLK	WiFi clock
		29	GND	GND
		28	SD1_CMD	WiFi control commands
		27	SD1_D0	Wifi data signal
		26	GND	GND
		25	MCU_POWER_EN	Power supply enabled
		24	PIR_IN	PIR sensing
		23	GND	GND
		22	CARD_DETECT	SD card detection
		21	SD_EN	SD card enable signal
		20	SDIO1_CDATA3	SD card data
		19	SDIO1_CDATA0	SD card data
		18	SDIO1_CDATA1	SD card data
		17	SDIO1_CDATA2	SD card data
		16	SDIO1_CCMD	SD card commands
		15	SDIO1_CCLK_OUT	SD card clock output signal
		14	GND	GND
		13	SD1_HOST_INT0	WiFi interrupts the signal
		12	MCU_LED1	LED lights
		11	MCU_LED2	LED lights
		10	SW_ON/OFF_F	switch
		9	GND	GND
		8	WB	
		7	GND	GND
		6	3.3V	3.3V power supply
		5	+5V_LI	4.2V lithium battery
		4	GND	GND
		3	GND	GND
		2	+5VBQ	4.2V power supply
		1	+5VBQ	4.2V power supply
P8	J1	1		antenna
P9	K2	1	Switch	The switch wake-up and reset buttons are active low

3. Electrical Parameters

3.1 Absolute Electrical Parameters

Parameter	Description	Min	Max	Unit
Ts	Storage temperature	-40	150	℃
VCC	Power supply voltage	3.3	4.2	V
Static electricity discharge voltage (Air)	TAMB-25℃	-6	6	KV
Static electricity discharge voltage (Contact)	TAMB-25℃	-3	3	KV

3.2 Working Conditions

Parameter	Description	Min	Max	Unit
Ta	Working temperature	-20	65	℃
VCC	Power supply voltage	3.3	4.2	V
VOL	I/O low-level output	0	0.7	V
VOH	I/O high-level output	2.5	3.6	V

3.3 RF Power Consumption

Mode	Power (mA) (VCC=3.3V)
Sleep Mode	5uA
TX Test mode (2.4G HT20@17dbm)	288
RX Test mode (2.4G HT20)	53

4. RF Parameters

4.1 Basic Wi-Fi Performance

Parameter	Description
Wi-Fi standard	IEEE 802.11 b/g/n
Frequency Range	2.400 GHz ~ 2.4835 GHz
Number of Channels	2.4GHz: Ch1 ~ Ch13
Antenna Type	External IPEX interface

4.2 Wi-Fi RF Performance

4.2.1 Wi-Fi TX Performance

Mode	Rate	Power	EVM
802.11b	11Mbps	16dBm±1.5dB	≤-10dB
802.11g	54Mbps	16dBm±1.5dB	≤-25dB
802.11n	MCS7	16dBm±1.5dB	≤-28dB

4.2.2 Wi-Fi RX Performance

Working State	Rate	RX Sensitivity (Test Value)	RX Sensitivity (Standard Value)
(802.11b, 20MHz) @8% PER	1Mbps	−97dBm	≤-85dBm
	2Mbps	−95dBm	≤-85dBm
	5.5Mbps	−92dBm	≤-85dBm
	11Mbps	−90dBm	≤-85dBm
(802.11g, 20MHz) @10% PER	6Mbps	−94dBm	≤-85dBm
	9Mbps	−92dBm	≤-85dBm
	12Mbps	−91dBm	≤-85dBm
	18Mbps	−88dBm	≤-85dBm
	24Mbps	−85dBm	≤-85dBm
	36Mbps	−82dBm	≤-85dBm
	48Mbps	−79dBm	≤-85dBm
	54Mbps	−77dBm	≤-85dBm
(802.11n, 20MHz) @10% PER	MCS=0	−93dBm	≤-85dBm
	MCS=1	−90dBm	≤-85dBm
	MCS=2	−89dBm	≤-85dBm
	MCS=3	−85dBm	≤-85dBm
	MCS=4	−82dBm	≤-85dBm
	MCS=5	−78dBm	≤-85dBm
	MCS=6	−76dBm	≤-85dBm
	MCS=7	−73dBm	≤-85dBm